

REMARKS

The above Amendments and these Remarks are in reply to the Office Action mailed October 8, 2003. Claims 1-52 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-52. The present Response amends claims 1, 9 and 17, leaving for the Examiner's present consideration claims 1-52. Reconsideration of the rejections is requested.

I. Claim Amendments

Claims 1, 9 and 17 have been amended to reduce redundant language that existed in these claims, and to make these claims more readable. These amendments are not narrowing.

II. Resubmission of a Previously Submitted Information Disclosure Statements (IDS)

A supplemental IDS was submitted to the USPTO on October 8, 2002, as evidenced by the attached copy of the date stamped return post card. Applicants are resubmitting this supplemental IDS, and respectfully request that the Examiner initial the forms 1449, indicating consideration of the documents listed thereon.

III. Additional IDS

Applicants are submitting a further IDS herewith, and respectfully request the Examiner initial the forms 1449, indicating consideration of the additional documents listed thereon.

IV. Rejections under 35 U.S.C. 103(a)

Claims 1- 52 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Lee* (U.S. Patent No. 4,789,801). Claims 1-52 were also rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Sakakibara et al.* (U.S. Patent No. 4,643,745).

Exemplary Claim 1 includes a second electrode "wherein said second electrode is formed to have a leading nose and two side walls with ends to the side walls bent back to substantially meet each other." It is admitted in the Office Action that neither Lee nor Sakakibar teach these features. However, it is asserted in the Office Action that "it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that specific configurations of the electrodes would have been an obvious matter of design choice." Additionally, it is also asserted in the Office Action that since the second solid electrodes in Lee and Sakakibar are also collector electrodes, they would work equally well whether they are solid or having an annular space in the center ... because the collector electrodes collect ion particles on the surface." It is further asserted in the Office Action that Applicants did not provide any advantages for electrodes having this particular configuration over other configurations. Applicants respectfully disagree with the above assertions, as explained below.

First of all, a second electrode that "is formed to have a leading nose and two side walls with ends to the side walls bent back to substantially meet each other" will be less expensive to produce than a solid electrode having the same outer dimensions (i.e., the same height, thickness, and depth). Further, a second electrode that is formed, as claimed, will be weigh less than a solid electrode having the same dimensions. A lighter second electrode results in an overall lighter system (which is easier to maneuver and less expensive to ship), as well as making the second electrode easier to remove (for those embodiments, where the second electrode is removable from the housing, e.g., as in claims 21-23 and 26-33). To achieve these advantages, a "U" shaped electrode including a nose and two side walls, as shown in FIGS. 4A and 4B, was initially developed. However, as described in paragraph [0097] of the specification, the open end of the "U" shaped electrode (i.e., at the downstream ends of the two sidewalls) may contain sharp edges. Further, the gap between the side walls, and the sharp edges at the ends of the side walls, may generate unwanted eddy currents in the second electrode. Such eddy currents could create a "backdraft" or reverse airflow, which slows down the airflow rate in desired forward direction (e.g., from an inlet to an outlet).

To overcome these potential disadvantages, as explained in paragraph [0098], the ends of the sidewalls are "bent back to substantially meet each other," as claimed. The bent back ends eliminate the gap between the side walls, and thereby reduces or eliminate the unwanted eddy currents typically generated by the "U" shaped electrode. The bent back ends will also provide a surface that is easier and safer to clean, as compared to an electrode with two sharp ends.

For the convenience of the Examiner, paragraph [0098] is reproduced below in its entirety:

[0098] In a preferred embodiment, the protective end **241** is created by shaping, or rolling, the trailing sides or side walls **244** inward and pressing them together, forming a rounded trailing end with no gap between the trailing sides or side walls of each second electrode **242**. Accordingly the side walls have outer surfaces, and the outer surface of end of the side walls are bent back adjacent to the trailing ends of the side walls so that the outer surface of the side walls are adjacent to, or face, or touch each other. Accordingly a smooth trailing edge is integrally formed on the second electrode. If desired, it is within the scope of the invention to spot weld the rounded ends together along the length of the second electrode **242**. ... The rounded ... end is an improvement over the previous electrodes **242** without a protective end **241**. Eliminating the gap between the trailing sides **244** also reduces or eliminates the eddy currents typically generated by the second electrode **242**. The rounded protective end also provides a smooth surface for purpose of cleaning the second electrode. Accordingly in this embodiment the collector electrode is a one-piece, integrally formed, electrode with a protection end.

Claims 2-8, 18, 21, 24, 26, 29, 32 and 35 depend from and add additional features to independent claim 1. Applicants assert that these claims are patentable for at least the reasons discussed above with regards to claim 1, as well as the features that they add.

Independent claim 9 includes the feature "wherein said second electrode is formed to have two side walls with ends to the side walls bent back to substantially meet each other in order to form a smooth trailing edge on said second electrode." For at least the reasons discussed above with regards to claim 1, Applicant asserts that claim 9, and its dependent claims 10-16, 19, 22, 25, 27, 30, 33 and 36, are also patentable over the applied reference.

Independent claim 17 includes the features "wherein said second electrode is formed to have two side walls with ends to the side walls bent back to substantially meet the other side wall in order to form a

smooth trailing edge on said second electrode." Claims 20, 23, 28, 31, 34 and 37-44 depend from and add additional features to independent claim 17. Applicants assert that these claims are patentable for at least the reasons discussed above with regards to claim 1.

Independent claim 45 includes the features "a second electrode, located downstream of said first electrode, having a nose and two trailing sides extending downstream, towards said outlet, from said nose; said trailing sides include an end section that is formed inward, back towards said nose, such that substantially no gap exists between said trailing sides." Claims 46-50 depend from and add additional features to independent claim 45. Applicants assert that claims 45-50 are patentable for similar reasons to those discussed above with regards to claim 1.

Independent claim 51 includes the features "a second electrode, located downstream of said first electrode, having a nose and two trailing sides extending downstream, towards said outlet, from said nose; said trailing sides include an end section that is formed by bending said trailing sides inward and back towards said nose, such that said end sections are adjacent to each other and within said trailing sides of said second electrode." Claim 52 depends from and adds additional features to independent claim 51. Applicants assert that claims 51 and 52 are patentable for similar reasons discussed above with regards to claim 1.

VI. Conclusion

In light of the above, it is respectfully requested that all outstanding rejections be reconsidered and withdrawn. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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